WIL 4-2a

United States Department of Agriculture | Forest Service | RO

Reply To: 3420

Date: SEP 05 1986

Subject: Pest Evaluation, Okanogan NF

To: Forest Supervisor, Okanogan NF

On August 4 and 5, Sally Cooley and Roger Sandquist, FPM pathologist and entomologist, respectively, visited the Okanogan NF to look at several sites and evaluate them for insect and disease problems. On August 4, they were accompanied by John Townsley, SO, and Bill Terrill, Tonasket RD, to visit two areas on or near the Tonasket RD. On August 5, they were accompanied by Debbie Butler and Ken Marchand, Winthrop RD, to look at one plantation on the Winthrop RD.

Little July: This 20-acre plantation on the Tonasket RD was naturally regenerated with western larch in 1972, using a seed tree cut. Seed trees were removed in 1981 and 1982. The elevation is 4500 feet, slope is 0 to 5 percent, and aspect is SW. The previous stand and surrounding stand consists of Douglas-fir, western larch, and lodgepole pine. Some Douglas-fir and lodgepole pine has also seeded into the unit.

A large percentage of the regeneration, particularly in the center of the unit, had dead tops or were completely dead. Damage was primarily on western larch, with a few Douglas-fir affected as well. According to John and Bill, foliage on these trees had turned yellow last August. Only a few trees with the same sort of yellowing foliage were found on this visit. Trees with dead tops were smaller, on the average, than undamaged trees. They also were more common in areas which apparantly had suffered more compaction during harvesting and slash piling than in non-compacted or less compacted areas. Frequently, damaged trees were clustered together.

There were no signs or characteristic symptoms of needle fungi found on needles of damaged trees. Stem injury, as well as needle death, indicates that stem damage is the primary problem rather than needle damage. Several samples of trees with dead tops were collected so that isolations for canker fungi could be made at the margin between live and dead tissue. Isolations were made from five larch stems; the canker fungus, Phoma, was recovered from all five stems. Isolations from the canker margin on one Douglas-fir yielded only Trichoderma spp., a saprophtyic fungus. Most conifer canker fungi, including Phoma spp., infect tissue that has been weakened or previously killed by other agents such as frost or drought. Except in nursery settings, Phoma rarely is found attacking healthy, vigorously-growing trees. In this plantation, Phoma most likely has invaded tree tissue that has been injured by extreme environmental conditions.

Severe drought conditions last year, in combination with compacted soils over much of this plantation, are reasonable causes for tree and top mortality. Canker fungi play a secondary role; elimination of initial cause(s) of damage or stress will reduce or eliminate infection by fungi. Thinning operations, planned for FY '87, should discriminate against damaged or obviously stressed trees (those with reduced shoot and needle growth).

Corn Buy-Back: This project analysis area on the Tonasket RD encompasses 5000 acres. Two small areas within the analysis area, Corn #1 and Corn #4, were looked at. Species present in these two small areas are Douglas- fir, western larch, and lodgepole pine. Corn #1 is an unentered stand; Corn #4 had a sanitation cut for dwarf mistletoe 10 to 15 years ago. Dwarf mistletoe was present on Douglas-fir and western larch throughout the area. Phellinus weirii, cause of laminated root rot, was present on Douglas-fir throughout both stands; characteristic laminated decay and down trees with root balls were found. In Corn #1, several pockets of old, dead standing Douglas-fir were found, with fruiting bodies of the brown cubical butt rot fungus, Phaeolus schweinitzii, found on the ground nearby. Although this fungus rarely kills the trees it infects, it will cause decay in the base of the bole which may then lead to breakage at that point. It may also predispose infected trees to attack by the Douglas-fir beetle.

This area will be cut in about 3 years. Three options were presented by John and Bill as possibilities for regenerating the area:

1. Western larch seed tree cut; regenerate with western larch.

2. Western larch seed tree cut; regenerate with western larch and plant some ponderosa pine. Remove western larch at commercial thinning; grow ponderosa pine to rotation age.

3. Clearcut and plant ponderosa pine.

From a disease standpoint, all three options are good. By growing larch or pine, they minimize the risk of infection by P. weirii since larch is only moderately susceptible and ponderosa pine is resistant to the disease. Risk of Armillaria root rot, common on the Okanogan NF, will also be reduced through use of western larch and pine. Dwarf mistletoe can be controlled and managed easily with clearcuts and seed tree cuts. Trees with little or no mistletoe should be selected as seed trees.

Cub Creek: This 35-acre Douglas-fir plantation on the Winthrop RD was planted in 1973. The elevation is 5000 feet and aspect is north. Engelmann spruce, subalpine fir, lodgepole pine, and ponderoas pine have regenerated naturally in the plantation. A large number of the Douglas-fir, particularly in the center of the plantation, are chlorotic (foliage turning yellow) with heavy cone crops. Foliage is thinning on many as well. Affected trees seemed to be fairly evenly distributed through the center part of the plantation rather than in discrete patches. No dead Douglas-fir were seen; a few dead subalpine fir were present.

A number of large old stumps were infected with P. weirii or Fomes annosus (cause of annosus root and butt rot). Several of the dead subalpine fir were infected with F. annosus; these infected fir were found in the lower (northern) part of the plantation. No signs or symptoms of root disease could be found on excavated roots or root collars of several chlorotic Douglas-fir that were examined.

It appears that the chlorotic and unhealthy appearance of the Douglas-fir in this plantation is due, not to root or foliage disease, but to abiotic causes such as cold, drying winds during the winter, off-site seed source or nutrient deficiency. Other species, if suitable silviculturally, should be considered for this site during thinnings or for the next rotation. It would be interesting to know the source of the seed for this planting.

If FPM can be of further assistance, please let us know.

Sincerely,

James S. Hadfield

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cc:
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